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10/574,935	03/15/2007	Hong-Ki Lee	68284-230124	5557
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VENABLE LLP				
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EXAMINER				
GAWORECKI, MARK R				
ART UNIT		PAPER NUMBER		
2884				
MAIL DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/574,935

**Applicant(s)**

LEE, HONG-KI

**Examiner**

MARK R. GAWORECKI

**Art Unit**

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 April 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 12-19 is/are allowed.  
6) ☒ Claim(s) 1-11 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date 4/7/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. The information disclosure statement filed 7 April 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to in the lined-through references has not been considered. Copies of the foreign documents in question have not been received by WIPO and unless they have been cited by the examiner, these documents have not been considered.

***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 103, 113, 123, 122, 134, 151, 152, 205, 206, 252, 254, 256, 257, and 259. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include numerous reference sign(s) mentioned in the description: for example, 242, 244, 246, and 247. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

5. The disclosure is objected to because of the following informalities:

6. The descriptions of the figures, especially Figs. 10 and 11, do not match the corresponding figures, in terms of reference numerals, as addressed above. The specification has not been checked to the extent necessary to determine the presence

of all possible errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. Claim 1 ends with the phrase, "a unit pixel supporting the upper layer including more than a pair of anchors on the ROIC substrate for." This phrase appears to be incomplete. For the purposes of this examination, the examiner has read this to simply mean that there are more than two anchors on the ROIC substrate for supporting the upper portion of the device.
10. With respect to claim 2, the limitation, "...an upper layer of a sandwich shape including an absorption-transmission layer having a cutting area in the middle thereof and a bolometer layer placed both on and under the absorption-transmission layer..." is unclear and indefinite as to the actual nature of the structure. It is unclear as to how the bolometer layer is both on and under the absorption-transmission layer or how this structure constitutes a "sandwich shape". Due to the insufficient correspondence between the figures and the description thereof, the scope of this claim is indefinite and cannot be ascertained to the extent required for further examination on the merits.

11. Claim 4 recites the limitation "wherein the distance between the bolometer layer and the absorption-transmission layer is  $\lambda/4$ ". There is insufficient antecedent basis for this limitation in the claim. The term " $\lambda$ " is not defined in this claim or the claims from which it depends.
12. Claims 5 is rejected for reasons of dependency upon claim 2.
13. Claims 3 and 8-11 are rejected for reasons of dependency upon claims 1 or 2.
14. Claims 6 and 7 are rejected for reasons of dependency upon claim 1.

***Allowable Subject Matter***

15. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. Further, claims 6 and 7 would be allowable for reasons of dependency upon claim 1.
16. Claims 12-19 are allowed.
17. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 1, Kim (6,198,099) teaches an infrared bolometer device (abstract) including an integrated circuit substrate (212), a first buffer layer on the substrate (216), a cavity (See Fig. 4), a reflective layer (275), a bolometer layer (285), and an IR absorption layer (295/297). Kim does not show the claimed structure wherein the reflective layer is located on a bottom layer on a first buffer layer which is on the substrate.

With further respect to claim 1, Kimata (JP-10332480-A, enclosed with machine-translated drawing descriptions) shows a silicon substrate (1), an insulating layer on the substrate (80), a reflective layer on the insulating layer (70), a cavity (in the area of numeral 90), an upper layer including an insulating layer (110), a buffer layer (130), a bolometer layer (11), and a second insulating layer (100). Kimata fails to show an absorption-transmission layer or and ROIC substrate.

With respect to claims 12-19, neither Kimata nor Kim, as applied above teaches the claimed steps of forming the infrared sensor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK R. GAWORECKI whose telephone number is (571)272-8540. The examiner can normally be reached on Tuesday through Friday, 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. R. G./  
Examiner, Art Unit 2884  
11 September 2008  
/David P. Porta/  
Supervisory Patent Examiner, Art Unit 2884